

Appln No. 09/778,992

Amdt date September 13, 2004

Reply to Office action of July 13, 2004

Amendments to the Specification:

Please replace the paragraph beginning on page 5, line 15 through page 6, line 3 with the following rewritten paragraph:

The main function of the CDR 12 in the present invention is to provide retimed data suitable for input to the electronic switch matrix 3. However, the multi-rate CDR 12 device may perform other functions. For example, the output bit clock and retimed data may be used for performance monitoring. To this end, multi-protocol signal processing may be provided as part of the interface. For example, certain data transmission protocols including the various rates of Ethernet and Fibre Channel protocols use only a subset of all possible bit-patterns as transmitted symbols. Accordingly, the appearance of an illegal symbol in the bit-stream can be interpreted as a sign of transmission errors. In its simplest form, the necessary signal processing function to perform illegal symbol detection for such protocols may comprise a serial-parallel converter 50 and a fast look-up table in a fast memory 52 for example. The fast memory 52 would be programmed at connection establishment with the valid symbols expected during transmission of the selected protocol. The received symbols can then be continuously compared against the valid symbols to determine e.g. the error-rate performance. Further, certain protocols (such as Ethernet) that transmit data in packets use particular transmitted symbols to indicate the start and end of data packets. For such protocols it may also be possible to determine e.g. the packet-rate of the channel. As a further example, other protocols such as SONET/SDH include fields in the bit stream that may be

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written to and read from to provide end-to-end performance monitoring purposes. Accessing these fields requires a CDR device to derive the bit rate of the stream.